

COLORADO RIVER RECOVERY PROGRAM
FY 2003 ANNUAL PROJECT REPORT

RECOVERY PROGRAM
PROJECT NUMBER: 85D

I Project Title: Realtime Sediment Monitoring 85d

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III. Project Summary:

The Recovery Program has implemented a number of programs to help reproduce a more natural hydrograph on the Green River below Flaming Gorge Dam to benefit endangered fish. The 1990 Flaming Gorge Biological Opinion and the recently released Flaming Gorge Synthesis Report both contain recommendations for matching the peakflow of the Yampa River with peak flow of the Green River to create a more natural hydrograph for the Green River below the Yampa confluence. One objective of the effort is to identify flow patterns that maintain active, complex channel characteristics and spawning bars, and flows that create conditions that clean fine-grained sediments from cobble substrates at spawning bars. To monitor these conditions, 10 sensor pairs were deployed on the Green River sites and were replaced when freezing or leakage caused failure. Sediment load sensors will be repaired or replaced as needed at low flow. Cell-phone real-time monitoring equipment was added in October 2002 so that the function of the sensors can be monitored and sediment movement can be tracked. Plans provide for Mike Carpenter of the USGS to develop a data template for a web page where the data from the sensors can be viewed on a near real-time basis. The sensor locations will be monitored during runoff with Sonar and acoustic-Doppler equipment to facilitate channel surveying which will be used as calibration checks of thickness of bed material above the sensors. This work will be coordinated with USGS Biological Resources Division. The spawning-bed site will be visited, as needed, in the spring before runoff or during summer or fall low flow to service equipment and download data. The load-cell sensor functions by weighing the sediment, water, and air above it. An

accompanying pore-pressure sensor weighs the water and air above it. The difference between the two weights is the weight of the sediment overlying the sensor pair. Combined sensitivity and repeatability are +/- 0.01 feet of sediment thickness or less.

- IV. Study Schedule: Initial Year - 2001, Final Year - 2003 ongoing if successful
- V. Relationship to RIPRAP: Green River Action Plan: Mainstem
I.A.3.a Operate Reservoirs Pursuant to Biological Opinions
- VI. Accomplishments of FY 2001-2 Tasks and Deliverables, Discussion of Initial Findings and Shortcomings:

Because of Bureau/Recovery Program budget problems, a contract was not worked out with USGS during FY 2001. After discussion with the WAC members and Program staff the project was moved to the 2002-2003 budget cycle. Work was able to commence in mid-October 2001, and all of the sensors at the Jensen razorback bar were repaired or replaced. The new installation was accomplished by digging a trench out to each sensor location and installing flexible pipe. Wires for each sensor were pulled through the pipe and attached to new data logger units. This installation has made it easier to replace and repair sensors in the future.

The Jensen site was revisited in October 2002 and all sensors appeared to be intact and giving reasonable output. The bar was completely dry, and the cobbles did not appear to have been reworked since trench backfilling in October 2001. Real-time monitoring capability was added by installing a cell phone, modem, and solar panels. Data collected in the data logger can now be accessed by dialing the cell phone and sending instruction for the data to be downloaded to a remote computer via a modem. During a data-collection call from Tucson, a power drain problem was discovered and the cell-phone turned off until the power problem can be fixed, in order to maintain data logging.

- VII. Recommendations: At the recommendation of the Recovery Program Staff this project was terminated at the end of FY 2003. This recommendation was discussed at a Biology Committee meeting in October of 2003 and the Committee recommended that a report be developed to summarize the work accomplished and document the study results. The concluding report will be completed by May 31, 2004. No additional funds will be need to complete the project report.

VIII. FY-2001 Budget:	Reallocated to 2002
FY-2002 Budget:	\$38,000
FY-2003 Budget:	<u>\$20,000</u>
Total Expended in this Project	\$58,000

- IX. Status of Data Submission: A concluding report will be completed by May 31, 2004. No additional funds will be need to complete the project report.

Not applicable.

X. Signed: George Smith
Principal Investigator

November 14, 2003
Date